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China in Africa's telecom sector: Opportunities for human capital development? A case of Huawei in Nigeria.

RESEARCH ARTICLE

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Abstract

The inflow of Chinese investments into Africa's telecom sector presents opportunities for skill building and technology transfer, and African governments through their policy measures and actions can maximise these opportunities. This article examines how Chinese investments in Africa have contributed to human capital development and what role the government has played in leveraging these investments. Analysing data from a case study of Huawei in Nigeria, the study finds that Chinese enterprises operating in Africa are well placed to contribute significantly to skill building and technology transfer. However, their efforts need to be supported by government policies, which are important for human capital development. This paper contributes to the emergent literature on Chinese economic engagement in Africa and its implications for human capital development in Africa. Moreover, it provides an insight into the role of government policy in human capital development in Africa.

Key words: Human capital development, Training, Skill building, Foreign direct investments, Sino-Africa economic engagement

Introduction

China has made significant in-roads into the African economy. Chinese investments in Africa are no longer confined to the traditional extractive industries; they have expanded to industries such as construction and manufacturing and service sectors such as telecommunications, banking, wholesale-retail business and hospitality (Tang 2010, Chen et al. 2015). Chinese multinational companies—Huawei and ZTE—are among the major players in Africa's telecommunications industry, and they have been heavily involved in setting up and improving the core infrastructure on which Africa's communication industry relies (Cisse 2012, Gagliardone and Gaell 2014, Oreglia 2012).

In the recent years, Nigeria has emerged as a strategically important base for Chinese telecom firms partly because it is the largest telecom market in Africa. Huawei registered Huawei Technologies Co, Nigeria Limited and established its West African headquarters (HQ) in Lagos in 1999. Over the last 16 years, the Chinese company has established a solid presence in Nigeria and is currently the leading network equipment provider, in terms of market share, in the Nigerian telecom industry. Its operational facilities in Nigeria include a regional training centre in Abuja; a software R&D centre, a network hosting centre and a regional network operating centre in the Lagos HQ; and a business process outsourcing centre in Kano, Northern Nigeria (Huawei 2014a).

Huawei's ability to develop appropriate and affordable technologies for this part of the world has contributed to its success in Africa's telecommunication industry (Cisse 2012). Since entering the Nigerian market, Huawei has played a critical role in upgrading the country's ICT infrastructure, contributing to an increase in broadband penetration and connectivity in Nigeria. However, beyond financing the telecom infrastructure in African countries, its contributions to human capital development, through skill and technology transfer, remain crucial in order to leverage Chinese telecom companies' engagement in African countries.

While, on the one hand, Chinese economic engagement (CEE) in Africa is on the rise, on the other hand, the potential of Chinese investments to add value to African industries and contribute to the development of human capital has been questioned (Tull 2006, Ancharaz 2013). Table 1 presents the claims and criticisms of Chinese enterprises' labour practices in Africa and research based rebuttals to the claims. For example, Chinese labour practices have been heavily criticised (Baah and Jauch 2009, Flynn 2013). Claims have been made that Chinese companies employ convict labourers on projects in Africa (Chellaney 2010), are unwilling to hire local workers (Flynn 2013, Lorenz and Thielke 2007), offer low wages to African workers with limited opportunity for training and career development (Kamwanga and Koyi 2009, Gandolfo 2015), and subject African workers to poor working conditions (Human Rights Watch, 2011). See table 1.

Although such comments continue to permeate the narratives of CEE in Africa, Oya and McKinley (2016) note that they are often not based on concrete data. The researchers call for more research on employment-related opportunities and challenges of Chinese firms operating in Africa. While information is limited on the effects of CEE in Africa, it seems reasonable to argue that, despite the challenges, CEE in Africa provides valuable opportunities for human capital development, especially in a vital service sector such as telecommunications.

The main aim of this study is to ascertain whether CEE in Africa provides opportunities to develop African human capital. Using a case study approach, the paper investigates whether the investments and operations of Huawei, a Chinese telecom company, in Nigeria have contributed to human capital development (HCD), specifically, skill and technology transfer. The paper explores the training activities of Huawei in Nigeria and their effects on HCD. By doing so, it seeks to contribute to the emerging body of literature on CEE in Africa and its implications for HCD. On a broader level, it also explores how multinational corporations (MNCs) contribute to HCD, by focusing on a particular industry and MNC. This viewpoint is important because though Chinese MNCs share a home country, they cannot be considered as a homogenous group, and their practices in host countries are influenced by several factors specific to the MNC, the sector in which they operate in and the host country itself.

Furthermore, most studies on human resource development (HRD) focus on the internal organisation processes and consider a range of HRD interventions to enhance individual and organisational effectiveness. Thus while there is ample research on firm level/organisational level HCD, there is need for more research to be carried out on the national level. This study fills the gap as it examines the context of HCD and the political and institutional realities and interactions within it.

The article is organised into three sections. The first section reviews literature on the role of MNCs in human capital formation with a focus on training and the role of government policy in leveraging foreign direct investment (FDI) for HCD. The second section explains the methodology and data collection process. The third section presents the findings of this study, which is followed by a discussion of its implications for HCD in Nigeria, particularly the telecom sector.

The role of MNCs in human capital formation

Developing a country's human resources is a vital part to development (Sydhagen and Cunningham 2007, Pillay 2006), without it most development interventions will be ineffective (Kessels and Poell 2004) Thus, countries around the world are increasingly investing in the development of human capital in order to stimulate economic development. The rapid economic growth of resource-poor

East Asian countries of Korea, Taiwan, Singapore and Hong Kong, which is largely attributed to the sustained levels of investment in human capital, compared to the unstable economic growth and underdevelopment experienced by the resource rich countries in Sub-Saharan Africa clearly proves this point. UNDP's latest human development reports points out that Sub-Saharan Africa experiences the slowest progress on the human development index (UNDP 2016). Concrete human capital policies and strategies coupled with ample investments in education and capacity building is necessary for Africa's development (Hall and Jones 1999, Lynham and Cunningham 2006). According to the Global human capital report (World Economic Forum 2017:15), Nigeria currently ranked 114 in the global human capital index "…has a relatively large pool of tertiary educated workers, especially among its older generations, and comparatively strong staff training. However, it simultaneously records low primary and secondary education attainment across all age groups and one of the lowest current primary school enrolment rates globally, pointing to excessively uneven human capital outcomes and the untapped opportunities of pursuing a more inclusive human capital development approach". This is largely due to a weak institutional framework for HCD and negligible investments in education and training. Several bodies have sought to fill the void created by institutional inadequacies (Nsouli 2000, Jackson 2012, Mamman et al 2018). For example, education and training interventions from international institutions such as the African development bank, World Bank, the United Nations have increasingly complemented the weak efforts of governments in building their human capital. Similarly, the private sector is considered to play a crucial part in the education and capacity building efforts in several countries in sub-Saharan Africa through their business and partnership with governments (Business action for Africa 2010). MNCs are seen as a focal catalyst for HCD in Africa, Harvey et al (2002) posit that MNCs could potentially balance the HCD gap between African and developed countries.

FDI influences human capital formation and development, particularly through the interaction of host countries' policies, education and training system with the MNCs and their education and training activities (Slaughter 2002, te Velde 2002, Ritchie 2002, Blomström and Kokko 2002). Macedo as cited in Slaughter (2002, 7) asserts that MNCs 'can and do generate substantial human capital spillovers in developing countries and appropriate policies can maximize these'. FDI is not only a source of capital for growth in developing countries but through MNCs, it is also an active provider of employment, education and training, skill enhancement and technology transfer (Majeed and Ahmad 2008). Slaughter (2002) notes that MNCs can facilitate HCD through firm-level activities that allow for interaction with the host country labour market such as local employment, on the job-training, supporting the host country's educational and training institutions, etc. In addition, a rise in economic activity from MNCs leads to a rise in the host country's tax revenue, and increased revenue can in turn foster macro-economic stability, promoting higher educational and training investment by the government (Slaughter 2002). Furthermore, higher FDI inflows can prevent brain drain (Slaughter 2002). As the loss of highly educated locals to employment opportunities abroad remains an enduring concern in developing countries, the inflow of FDI resulting in MNCs setting up subsidiaries brings those employment opportunities back to the host countries.

Enhancing human capital through training and skill building

Training is also a prominent route through which MNCs facilitate HCD. O'Donnell and Blumentritt (1999) consider training as a mechanism for the transfer of technology and managerial knowledge to the local workforce. Although most recipients of MNCs' training are their employees, sometimes they also include employees of their customers, subcontractors and suppliers (Blomstrom and Kokko 2002). Trainings can be imparted via formal interactions, on-the-job classroom sessions, seminars, formal schooling, international training courses and education, etc. The spillover effects of training are particularly significant for developing countries than developed countries as the public education system, and consequently the knowledge base, tends to be relatively weaker in the former than in the latter (Blomström and Kokko 2002). Evidence confirms that MNCs carry out more training activities than local private firms (te Velde 2002). While most MNCs provide some level of training to their local employees, the type and amount varies depending on the mode of entry, the industry, the size and timeline of investment, type of operations, motivation for the investment and local conditions (Blomström and Kokko 2002). For example, training in service sectors is more focused on strengthening the skills and expertise of the employees (Blunch and Castro 2005). MNCs that use complex technologies tend to offer more employee training as their operations need skilled and trained workers (te Velde 2002).

In the context of Chinese MNCs in Africa, those engaged in low technology sectors do not offer elaborate training or capacity development opportunities. However, MNCs operating in telecommunications and high technology sectors train their employees on the nature of the company's products and technology. For example, King (2013) noted that Chinese telecom firm ZTE upon gaining its first telecom infrastructure contract in Ethiopia embarked on re-training 1000 Ethiopian engineers from the Ethiopian telecom corporation. This was done to ensure complete understanding and knowledge of ZTE technology. Moreover, Chinese firms in Africa have also engaged in voluntary contributions to promote general education in their host countries. For instance, China Petroleum Engineering and Construction Corporation funded a laboratory equipped with modern welding equipment to Egerton University (King 2013). Holley Cotec, a large Chinese pharmaceutical company provided scholarships to support the study of medicine, geography and the Confucius institute at the University of Nairobi. While the benefits of FDI to HCD abound, appropriate government policies in the host country are crucial to maximising the benefits and mitigating the negative effects. Thus, while Chinese investments in Africa provide opportunities for HCD, African governments through policy measures and actions should play an active role in steering these investments towards the intended outcomes.

Host country policies and human capital formation

While FDI plays a key role in human capital formation in host countries, HCD is not an automatic consequence of the presence of foreign MNCs (Blomström and Kokko 2002, te Velde 2002, Slaughter 2002). According to te Velde (2002), theory supports intervention from policy makers to direct FDI towards development. Governments need to not only attract FDI but also ensure that they maximise the benefits of FDI to achieve their developmental objectives, and they often rely on a combination of FDI and macroeconomic policies to achieve this (te Velde 2002).

FDI promotion policies in the form of investment promotion agencies, particularly those offering a one-stop service to investors, have been particularly successful in attracting FDI (Wells and Wint 2000). The use of fiscal and financial incentives linked to technology status (i.e. pioneer status) (Hanson 2001, te Velde 2002); implementing trade policies that are meant to facilitate trade by lowering tariff and non-tariff barriers (Morisset 2000); developing and upgrading infrastructures (Wheeler and Mody 1992); establishing export processing zones are measures through which governments have successfully attracted certain types of MNCs (Madani 1999). Further, in order to encourage MNCs to upgrade their operations, host governments can adopt policies that 'target certain types of TNCs (Transnational corporations); build effective institutions, impose tax levies linked to training; engage the private sector in education and training planning; and design effective technology policy where R&D centres interact with TNCs, etc'. (te Velde 2002).

While FDI, through the activities of MNCs, can promote HCD in host countries, this is not a certainty. This is because the primary interest of MNCs is to generate profit and not to engage in the development of the host country. To promote HCD and development in general, host country governments should deploy policies and measures that align inward FDI with developmental objectives. Te Velde (2002) argues that to maximise the contributions of MNCs to human capital formation, the government should formulate strategic education policies that will improve the chances of attracting more MNCs into the country. Further, the government should also offer MNCs incentives for carrying out training and skill-upgrading activities. Domestic education policies meant to raise the educational attainment and technical knowledge of locals are crucial because the presence of quality skilled labour in the host country usually serves a good basis for attracting asset-seeking MNCs (Blomström and Kokko 2002, Noorbakhsh et al. 2001).

In the context of CEE in Africa, the role of host country policies cannot be over-emphasised. While some African countries such as Angola and Nigeria have been successful at attracting FDI largely due to their abundant natural resources and the size of their markets, other countries that lack such geographic advantages have to rely on a mix of effective policies and strategies to attract FDI. Further, there is need for concrete policies in order to mitigate the negative effects associated with FDI such as the crowding out effect, negative wage spillovers etc. and maximise the benefits to the local economy. African governments need to direct FDI to crucial sectors of their economies and leverage these investments to strengthen their stock of human capital. Chen et al (2016) assert that Chinese FDI in Africa can generate local employment and opportunities for skill and technology transfer; however, policy measures are crucial to ensuring that these benefits are realised. A few African countries have engaged in active investment-promotion activities and have been successful in attracting Chinese MNCs into their manufacturing sectors, thus creating opportunities for job creation, training and skill transfer. For example, the Ethiopian government led by its then prime minister Meles Zenawi actively promoted investments into its manufacturing sector, inviting several investors from China. One of which is the Chinese shoe manufacturer, Huajian, which set up operations in Ethiopia in 2011. The company has since then employed over 4000 locals, training and equipping them with necessary skills (Lin 2016). Similarly, in Rwanda, investment-promotion efforts resulted in Chinese investors setting up a garment-manufacturing factory in 2015. Today, C and H garments has about 500 local employees (Lin 2016). Local content policies such as those employed in Nigeria and Angola's oil sectors (Mohan 2016); the import substitution policy in Nigeria's automobile sector (Chen et al 2016); and export processing zones and special economic zones in Nigeria (Brautigam and Tang 2011) can generate concrete gains for HCD and spur growth in these economies. Further, research shows that Chinese firms operating in Africa are more heavily influenced by host country policies, regulations and institutions than by the guidelines of the Chinese government (Weng and Buckley, 2016). This highlights the crucial role African governments and institutions can play in leveraging Chinese investments for HCD.

The following section introduces the methodology employed in this study. The paper describes how Huawei contributed to HCD through its training programmes in Nigeria and further explores the role of government policies in leveraging Chinese investments.

Methodology

Interviews and on-site observations were carried out by the researcher from March to April 2016 at Huawei's offices in Lagos and Abuja, Nigeria. Data was collected through 29 semi-structured interviews. Some participants were selected using purposive sampling and some through the snowball technique. Purposive sampling was employed because it ensures that individuals selected have an important perspective on the phenomenon being studied (Mason 2002, Robinson 2014). Table 2 presents the details of the interviewed participants. The interviews explored Huawei's contributions to HCD in Nigeria, particularly to skill and technology transfer via training. Questions also covered the policy measures and actions of the Nigerian government in leveraging FDI for HCD in the telecom sector.

Broad topic categories were formed based on the concepts and literature on MNCs and human capital formation as well as the objectives of this research. The findings were organised on topic categories/themes emerging from the interviews and derived from the literature reviewed earlier. Subsequently, transcripts from the interviews were manually coded according to the above categories and thoroughly examined to gain useful insights into the issues investigated. Excerpts from the interviews have been selected to elucidate key themes emerging from the findings. Various other documents such as company reports, press releases, training reports and policy documents collected in Nigeria were examined and used in this study. The document review focused on Huawei's training programmes, corporate social responsibility (CSR) initiatives and government policy information (e.g. local content in ICT policy document).

Findings and analysis

Huawei's training activities in Nigeria

As mentioned earlier, Chinese firms have been widely criticised for their unfavourable approach towards local labour. In fact, Kamwanga and Koyi (2009) note that 'even in cases where local source of labour has been utilized it has been observed that this tends to be on a limited scale with little capacity development and hardly any opportunities for technology transfer'. However, responses from this study present a starkly different picture: Huawei has actively contributed to skill building in Nigeria via employee training activities, training for clients and partners and training programmes implemented in partnership with the Nigerian government. Interview data suggest that Huawei's training centre in Abuja has seen roughly over 50,000 trainees since its inception. Built at a cost of US$ 20 million, the training centre serves Huawei employees in Nigeria and in the West African region (Huawei 2014a). Past and current employees of Huawei (R16, 17, 18, 19, 20) confirm that trainings are regularly conducted in various forms, including formal classroom sessions, on-the-job coaching, learning by observation and virtual sessions conducted by experts at Huawei's HQ in Shenzhen, China.

As Huawei operates in a high technology sector that requires highly skilled technical staff, training is a high priority for the company to ensure that employees are informed about new products, innovations and processes. Interviewees reveal that new graduate intakes at Huawei, Nigeria, undergo intensive training and induction within the first weeks of their employment as their knowledge base may be considerably different from that of engineering graduates in China. Experienced hires are also provided firm-specific training to acquaint them with Huawei's equipment, machinery and processes, which differ from those of other telecom equipment manufacturers such as Ericsson and Nokia. These findings are in line with existing literature, which suggests that MNCs operating in complex technology sectors tend to offer more employee training as their operations are dependent on highly skilled workers (te Velde 2002)

Blomström and Kokko (2002) explained that MNC training beneficiaries often include more than just their employees. This is evident in the case of Huawei. Both the training centre manager (R22) and the trainer (R23) assert that Huawei's training facility in Abuja is a crucial training ground for employees of partner firms, telecoms operators, clients, suppliers, Nigerian youths and government employees. The trainings range from ICT deployment, telecom equipment operation, management skills to general ICT solutions. Documentary data show that in addition to establishing guidelines, procurement requirements and audits to ensure its suppliers are up to industry standards and adhere to the electronic industry code of conduct, Huawei also holds training conferences on quality for its partners and suppliers. For instance, the Nigeria Supplier Quality Conference held at their headquarters in Lagos in 2014 was attended by the core management teams of 106 supplier firms (Huawei 2014b). Part of Huawei's supplier development programmes, this conference saw ideas being shared on value integrations, quality and service delivery enhancement to ensure a 'win-win' partnership for the suppliers and Huawei (Huawei 2014b). Huawei's move to train suppliers' employees and customers is in line with research that shows that MNCs engage in active supplier development programmes to improve their overall capabilities in the value chain (Botelho and Pfister 2011).

Huawei has also implemented two major training programmes in partnership with the Nigerian government: the *1000 Girls in ICT Training Programme* and the *ICTFORCHANGE-Nigeria 2000 Youth ICT Training* (see Table 3). Both programmes focus on equipping Nigerian youths with crucial ICT and management skills that could increase their chances of employment. The *1000 Girls in ICT Training Programme* commenced in 2013, with Huawei contributing US$ 1.3 million and the Nigerian government contributing US$ 1 million. The programme was concluded in 2016. Some of the participants undertook a two-month internship at Huawei, and some were offered employment at the company office in Nigeria. Recently, Huawei has launched another training programme in collaboration with the Nigerian government: *ICTFORCHANGE-Nigeria 2000 Youth ICT Training*. This programme is the outcome of a memorandum of understanding signed between Huawei and the Nigerian government in December 2015, to train 2000 youths in Nigeria on ICT. The training participants are to be selected by the Nigerian Federal Ministry of Communications Technology (FMCT) and the Ministry of Labour via an online application process. Huawei's training initiatives have also extended to include Nigerian government officials. A training course was organised in China for Nigerian government officials in September 2016 (see Table 3). Huawei actively promotes skill building and enhancement via its training activities in Nigeria and is open to collaborating with the government in order to contribute to social development.

Like most MNCs that contribute to educational development in their host countries, Huawei too supports general education in Nigeria by awarding scholarships to outstanding students in engineering and science-related streams at the University of Lagos. Huawei also provides grants and equipment to the African University of Science and Technology, Abuja (an affiliate of the Nelson Mandela Institute) (Huawei 2014c). Table 4 presents an overview of Huawei's contribution to general education in Nigeria. Apart from the financial relief that a scholarship affords its beneficiaries, it also motivates better performance among the students. A recipient of the Huawei-UNILAG scholarship (S1) explains this in the following words: '*Apart from the financial reward, psychologically it motivated me*'.

Motives underlying Huawei's training initiatives

The degree of training that MNCs provide to their employees varies based on factors such as the mode of entry, type of operations, local conditions etc (Blomstrom and Kokko 2002). Huawei's training activities in Nigeria have been shaped by the nature of its operations, organisational strategy, the industrial sector it operates in, local labour conditions and national institutional structures. For example, Nigerian government regulations such as the local content in ICT policy requires foreign MNCs such as Huawei to provide training to their local employees. Huawei's localisation strategy also prioritises the employment and training of local workforce. Although Huawei's training activities (e.g. *1000 Girls in ICT Training Programme*, *ICTFORCHANGE- Nigeria 2000 Youth ICT Training*) have been seen CSR initiatives and a move by the company to link its products and services to the developmental needs of the host country, one must add that these trainings also strengthen Huawei's political capital and its brand value as a socially responsible organisation. This perception is useful for Huawei when dealing with the local authorities. Corkin (2011) empirically confirmed that large

Chinese companies engage in developmental programmes in host African countries to earn useful political capital. This notion gains more credence in light of Huawei's preference for collaborating with the Nigerian government for implementing its CSR initiatives. Doing so ensures that such contributions are not only visible to the local populace but also to the administration. There is an economic argument for companies to carry out CSR activities, especially if they are highly visible and more vulnerable to reputational damage (Vogel 2005), as is the case with Chinese enterprises operating in Africa. Additionally, Huawei's actions in Nigeria align with the directives of the Chinese government for its large multinationals operating in Africa: to contribute to development of the host countries and promote the narrative of win-win partnerships and development—a phrase that Beijing uses to characterise its engagement with Africa, and Huawei uses frequently in its CSR reports. An important question that has been raised is the skill transfer effect of these training activities and their impact on the employability of the beneficiaries (Tsui 2016). These questions are addressed in the subsequent paragraphs.

Effects of training activities on skill and knowledge transfer

Huawei has made significant investments in its training and skill-building activities in Nigeria. Both current and ex-employees (R16, 17, 18, 19, 20) cite the training opportunities offered by the company as one of the reasons for joining the Chinese MNC. They add that the training and experience received at Huawei have enabled them move to higher positions with higher pay and benefits in other telecom companies. A former employee of Huawei (R16), who worked for six years as a wireless 2G, 3G engineer at their head office in Lagos and left to join another mobile telecom infrastructure company explains, '*My experience with Huawei has been so beneficial knowledge wise, working with Huawei gave me a holistic knowledge of telecom…an edge at my current job*'. R17 and R18 also made similar observations. R17 currently works as a consultant engineer and a subject matter expert on Huawei/ZTE radio equipment at a competing MNC within the telecom sector. R18 currently works at a foreign MNC in Nigeria. Both consider the experience and skills gained at Huawei as vital for securing their current jobs and performing their current duties. These responses support previous findings (Mohan and Lampert 2013, Lampert and Mohan 2016) that the presence of Chinese telecommunication companies has enabled Nigerian employees to further their careers in other organisations.

The trainings offered by Huawei in partnership with the Nigerian government helped unemployed or otherwise un-engaged youths occupy their time gainfully. Findings from the *1000 Girls in ICT Training Programme* revealed that the programme overlapped with a five-month-long strike called by Academic Staff Union of Universities in July 2013. Thus, the programme offered the participants, especially those studying in State universities in Nigeria, an opportunity to be engaged when the national universities were closed. One trainee (T1) says, '*The university was on strike […] I just saw free 2-day training programme, after applying I didn't really know what it was going to be about, but I knew it was a free training and a chance for me to just leave the house and learn something*'. According to the trainees (T1, 2, 3, 4), the training afforded them an opportunity to acquire new skills as they had no prior computer engineering/ICT training experience. T3 says, '*The training was impactful, the soft skills training is something one will use everywhere and the technical skills helped me to learn about the telecoms sector*'. Commenting on the 2-month internship experience at Huawei, T3 who was assigned to work on a power project involving Huawei and other companies says, '*The experience was worth it. I got to work with other big companies (multinational companies) on this project […] I learnt a lot working with them*'. Huawei's second youth training programme *ICTFORCHANGE* is designed to ensure that participants have the relevant industry-specific skills and certifications to gain employment in various sectors of the economy. While the goal is promising, its execution and long-term effects on the skills and employability of the participants remain to be seen.

Effects of training activities on employability of trainees

Outside of its training activities for employees, partners, suppliers and customers, Huawei's training initiatives have had limited impact on the employability of its trainees. For example, from the *1000 Girls in ICT Training Programme*, only five currently work at Huawei on a contract basis. One of the participants (T1) who interned at Huawei says the following of her overall experience: '*I commend what the federal government and Huawei is doing, and they are doing it well, however I have my reservations. The aim of the training was to get 1000 girls into ICT […] I don't think they achieved it in any way*'. She adds, '*Even the 50 people that did the internship, after the internship, we were just asked to leave, no follow up, nothing at all, they didn't achieve their aim. Huawei retained very few, less than 10 out of 1000 trainees*'. T2, 3 and 4 echoed her sentiments about the disappointing overall outcome of the programme. A trainee (T2) currently working on an outsourced/contract basis with Huawei reflects on her experience:

'*In terms of learning, the experience in China was great […] the only thing that was a disappointment is about the employment. We were thinking since we went through training, the internship, travelled to China to undergo further training maybe we had the chance of being retained as direct permanent staff of Huawei*'.

T2 still worked in the department that she joined as an intern; however, the decision to let her continue in the same department was made her supervisor to save time and money on recruiting a new staff member as opposed to a pre-planned outcome of the training programme. Reflecting on the effects of the training on her present and future employability T3 says, '*Well, I'm not sure as I* *am still unemployed but I think it will be, as I included everything (acquired skills, experience and certification), on my CV*'. The programme lacks a concrete post-training outcome, which should have been planned by Huawei and the Nigerian FMCT. Further, the training programme was not evaluated in terms of its ability to equip the participants with crucial skills and provide them employment opportunities in the sector. This is a major drawback because the participants of the programme were from different academic disciplines; therefore, many possibly required intensive training to compensate for their lack of specialisation in telecom and related ICT fields. The impact of such training programmes can be maximised with better coordination between Huawei and the Nigerian government. Nevertheless, the training did provide participants with skills and insights into the telecom industry that they might otherwise not have gained.

Addressing questions on the intended impact of their training programmes, a Huawei manager (R21) says the following about the *ICTFORCHANGE-Nigeria 2000 Youth ICT Training:* '*We do not want to just make some noise. We really want to give them training and skills to enable them to find a good job in the ICT industry. Of course, Huawei also would provide some employment opportunities for them and also give recommendations for those people*'. Though the real motives behind the various projects of the Chinese government and Chinese companies in Africa have been questioned, interview data suggests that Huawei intends for their training programmes and activities in Nigeria to have real benefits for the local populace.

While Huawei has contributed to the skill development and knowledge transfer via its training activities in Nigeria, findings suggest that the Nigerian government has also taken proactive steps to leverage the foreign investments in the telecom sector for HCD. The subsequent paragraphs specifically focus on the local content policy of the Nigerian government owing to its significance for the telecom sector.

The role of government policy

The role of host government policies in human capital formation has been emphasised in various studies. In a bid to channel FDI towards HCD and strengthen the local capacity in the ICT sector, the Nigerian government introduced the local content policy. The National Information Technology Development Agency, an agency under the FMCT, set up the Office for National Content (ONC) to ensure implementation of the ICT guidelines. One of the guidelines in the policy addresses HCD in the ICT sector. It specifically calls on foreign multinationals to provide a local content plan to the ONC, detailing their vision for 'job creation, recruitment of local engineers, human capital development and value creation for the local ecosystem' (ONC, 2013:19). The policy is similar to the local content policy introduced and implemented in Nigeria's oil sector, which has been effective not only in enhancing local participation but also in creating and deepening linkages between multinational companies and local companies in the sector (Mohan, 2016). The reasons for introducing such a policy in the ICT sector mirror those in the oil sector—to drive local participation and enhance human capital. A manager at the ONC (R14) responsible for overseeing the implementation of the policy says the following:

'*It was clear that there was a capacity challenge in local content participation in ICT […] This is not simply because Nigeria wishes to capture value but because ICT cuts across and permeates every other aspect of development so there is no alternative but to grow indigenous capacity. So it's not so much as for import substitution or to reduce the stake of foreigners in the Nigerian market but necessarily to create the skills that are needed for Nigeria's development locally. So that's the background of why local content*'.

Although concerns as to whether the policy may act as a barrier to foreign investors have been raised, they are currently manageable. R14 explains how while the policy is being viewed as hostile to the operations of MNCs, they are aimed at creating solutions to work together:

'*[…] we are aware that foreign multinationals come with critical skills, global templates, and a rich repertoire of knowledge and executed projects to drive skills development locally. What the programme does is create nodes and avenues for collaboration so that certain aspects as it concerns public procurement will have to be done or sourced in partnership with Nigerian companies strategically to transfer knowledge or to train or equip[…]*'.

While the ONC is still in the initial stages of implementing and ensuring compliance to the local content guidelines, they have started receiving development plans from various multinational companies operating in the sector. A manager at Huawei explicitly stated during the interview that they do not view the policy as disruptive or a threat to their operations in Nigeria as they have pursued a workforce localisation strategy and are working with operators to develop software with more local content in their R&D centre in Lagos.

It may be premature to evaluate the effectiveness of the policy as it is still in the early implementation phase; however, the policy appears to be a step in the right direction as it has the potential to enhance local capacity and drive innovation and local participation in the sector. The FMCT and ONC's ability to work together with foreign MNCs and other stakeholders in the sector would in part determine the success of the policy.

Conclusions

Against the backdrop of enduring negative perceptions about the labour practices of Chinese enterprises in Africa, this study analysed the skill-building contributions of Chinese investments in Africa's telecom sector, using the case study of Huawei in Nigeria. Despite the growing literature on

Sino-Africa relations, few studies explore how the engagement has enhanced or constrained HCD in Africa, particularly in Nigeria. This article bridges this gap. It builds on previous research that justifies government involvement in ensuring that FDI is steered towards development in the host country.

Several key findings emerge from this study. Firstly, the Chinese telecom firm Huawei has contributed to skill building through its numerous training programmes and activities in Nigeria. These mainly comprise of training activities targeted towards its local employees and the employees of its suppliers, clients and customers. Secondly, Huawei, in partnership with the Nigerian government, has contributed to the skill development of the Nigerian youth through two public training programmes intended to equip participants with ICT skills, engage them in the telecom sector and provide them job opportunities in the sector. Thirdly, Huawei has contributed to general education in Nigeria by offering scholarships and grants and donating equipment to tertiary institutions. The results from this study support the notion that MNCs via training and skill-building activities play a significant role in HCD in their host countries. Additionally, these findings support the argument while Chinese engagement in Africa offers opportunities for HCD, government policy and strategy play a key role in reaching these opportunities to the respective African countries (e.g. Odoom 2015, Sautmann and Yan 2015, Chen et al. 2016, Agbebi et al. 2017).

Findings indicate that Huawei's contributions to HCD are guided by strategic objectives as well as the desire to generate positive awareness among the public and other stakeholders, gain political capital with the Nigerian government and industry stakeholders and further promote the narrative of win-win development. Its contributions are also shaped by government regulations and policy within the telecom industry albeit not to a significant extent. These findings supports the notion that though MNCs do not have an altruistic motive, there are strong economic arguments for MNCs contributing to the development of their host countries.

Though Huawei has collaborated with the Nigerian government on a number of training programmes, deepening these partnerships may help the organisation ensure that its contributions are sustainable and have a tangible long-term impact on HCD in Nigeria's telecom sector. This case highlights how some MNCs are willing to collaborate closely with the host government to implement training and other CSR activities. This partnership is worth investigating further as it could potentially shed more light on the interactions between MNCs and the host governments and their effects on HCD.

Additionally, these findings reveal that the Nigerian government is keen to leverage the engagement of multinational companies to develop the economy, particularly to enhance local capacity and technology transfer. The government recognises that the ICT sector is a viable alternative to natural resources such as crude oil in terms of revenue and employment generation. As a result, it has introduced policy actions and initiatives, such the local content policy, to leverage foreign engagement in the sector. While it is still too early to estimate the effectiveness of the local content policy in ICT, it is a step in the right direction. It is imperative that the Nigerian government continues to collaborate with foreign MNCs in the ICT sector to direct the benefits of their investments towards the development of the sector. Future studies on the effects of the local content policy can contribute to the literature on how host country policies affect human capital formation. In addition, future research could utilise the K4D (Knowledge for Development) framework to study how African governments leverage knowledge for economic growth and development.

Furthermore, as ICT infrastructure improves and foreign firm participation increases, so will the demand for highly skilled labour. While attracting foreign investments is not a challenge, for Nigeria to truly become a knowledge economy and be at the forefront of technology production in Africa, the government should intensify skill-development efforts in the sector. By encouraging partnerships between foreign firms such as Huawei and ICT-focused tertiary institutions and universities, the government can help increase the number of qualified graduates that are absorbed into the sector's workforce. Further, the government can leverage the expertise of foreign MNCs for HCD in Nigeria by encouraging more public-private partnerships in training initiatives.

Furthermore, on one hand, host country policies are said to influence the activities of MNCs, on the other hand, MNC operations could also have an effect on local labour policies (Wood et al 2014). By collaborating with governments, MNCs can help address systemic constraints to human development impact in the workplace. While this study stopped short on researching this issue, future research could do so, by investigating the broader effects of Chinese MNCs on labour policies in Africa, for instance the ILO decent work indicators (See ILO 2013) can be used to assess if Chinese MNCs play a role in upgrading labour policies in Africa or otherwise.

As highlighted earlier in the paper, the institutional framework for human capital development in Nigeria is weak, characterised by inefficient institutions, subpar investments in education and training, and a lack of a coherent and effective education policy and a comprehensive human capital development strategy. Thus, making interventions by international institutions such as the World Bank, the UN and the participation of the private sector in education and training crucial. The evidence in this paper highlights the role of MNCs in supporting HCD and capacity building in Nigeria. As this case shows that, the support has targeted a range of projects focused on general education, ICT skills training, workplace training and capacity building.

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Table 1: Claims and criticisms of Chinese enterprises' labour practices in Africa and research based rebuttals of claims

Claims and criticisms of Chinese enterprises' labour practices in Africa	Research based rebuttals of claims
• **Chinese companies employ convict labourers to work on projects in the developing world including Africa (Chellaney 2010),**	• This claim has been condemned by prominent Sino-Africa researchers as nothing more than anti-Chinese propaganda and more importantly not evidence based. (See Centre for Chinese Studies 2006, Blog post by Sautman and Yan titled 'Stirring up trouble: Claims that China sends convicts to labour in Africa are unfounded' on China Africa Research Initiative blog – China in Africa: The Real Story, August 21, 2010.)
• **Chinese companies are unwilling to hire local workers (Flynn 2013, Lorenz and Thielke 2007)**	• Tang (2010) study on the impact of Chinese enterprises on local employment in Angola and Congo, shows high and increasing levels of workforce localisation in Chinese enterprises and projects across a range of industry sectors in both countries. • Sautmann and Yan (2015) based on data from over 400 Chinese enterprises and projects in Africa, find workforce localisation rate to be over 85% in surveyed enterprise and projects. They condemn this claim as not based on systematic data.
• **Offer low wages to African workers with limited opportunity for training and career development (Kamwanga and Koyi 2009, Gandolfo 2015).**	• The scale and diversity of Chinese enterprises operating in Africa makes this claim problematic. Chinese firms operating in Africa cannot be treated as a homogenous group. Given sectoral, contextual and institutional differences, employment conditions are bound to vary in Chinese firms across different industry sectors in different African countries (King 2013).
• **Subject African workers to poor working conditions (Human Rights Watch, 2011).**	• Zambian copper mines are generally rife with labour related problems and this is by no means exclusive to Chinese mines in Zambia as poor working conditions have been noted in non-Chinese mines in Zambia. The problem of poor working conditions appears to be rooted in the absence of a strong and effective regulatory body in Zambia's copper mining industry. (See blog post by Brautigam, D. titled 'The Huma Rights Watch

	report on Chinese-owned mines in Zambia' on China Africa Research Initiative blog – China in Africa: The Real Story, November 11, 2011). • There exists huge cultural differences in terms of work/business ethics, expectations towards labour between Chinese society and individual African Societies. These differences in work culture and labour expectations often leads to labour related disputes and issues. (See blog post by Brautigam, D. titled 'Nigerian workers protest conditions at Chinese construction projects' on China Africa Research Initiative blog – China in Africa: The Real Story, February 1, 2013).

Table 2: Breakdown of Interview respondents

Code	Affiliation/ Role of interviewee	Number of Interviewees	Location	Data collection method	Date of data collection
	Government				
R1,2	Federal Ministry of Communications technology (FMCT)	2	Abuja	Face to face individual Interview	March 30 2016; April 7, 2016
R3	National Communications Commission	1	Abuja	Face to face Interview	April 8, 2016
R4	Federal Ministry of Trade and Investment (FMTI)	1	Abuja	Face to face Interview	April 6, 2016
R5,6	Federal Ministry of Labour and Productivity (FMLP)	2	Abuja	Face to face pair interview	April 4, 2016
R7	One Stop Investment centre (OSIC)	1	Abuja	Face to face Interview	March 29,2016
R8,9,10	Nigerian Investment Promotion Corporation (NIPC)	3	Abuja	Face to face individual Interview	March 29,2016
R11,12	National Information Technology Development Agency (NITDA)	2	Abuja	Face to face individual Interview	April 6, 2016

R13,14	Office of National content in ICT (ONC)	2	Abuja	Face to face individual Interview	March 30 –31, 2016
T1,T2,T3,T4	Trainee – 1000 Girls in ICT Training program	4	Remote Contact	Skype interview	17 June – 22 July 2016
R15	University of Lagos Student Affairs Official	1	Lagos	Face to face Interview	March 22, 2016
S1, S2	Beneficiaries Huawei-UNILAG Scholarship	2	Remote Contact	Skype interview	16 June, 2016
	Huawei				
R16, R17,R18	Ex-Employees	3	Remote contact	Skype interview	August 2, 2016- 19 May 2017
	Current employees				
R19, R20	Engineer	2	Lagos	Face to face Interview; Skype Interview	March 15, 2016; October 4, 2016
R21	Manager	1	Lagos	Face to face Interview	March 15, 2016
R22	Training Centre Manager	1	Abuja	Email Communication	May 10, 2016
R23	Trainer	1	Abuja	Face to face individual Interview	April 7, 2016

Total number of interviewees	**29**

Table 3: Overview of Huawei training programs in Nigeria

Training Program	Short Description	# Participants	Financed by	Location	Duration
1000 girls in ICT	Training was on imparting participants with technical ICT skills and soft skills in order to improve their employability in the ICT sector. The programme was carried out in stages. Initial stage: ICT training – 2 days, 1000 trainees; Stage 2: HCDA (Huawei certified Datacom associate) training – 5 days, 200 trainees; Stage 3: Internship – 2 months, 50 trainees; Final Stage: Further training in China – 1 week, 20 trainees.	1000 girls	Huawei, Nigerian government	Lagos, Abuja, Shenzhen, China	2013 - 2016
ICT for Change	Training is targeted at developing the skills of 2000 graduates from engineering and ICT related subjects in order to enhance their employability. Huawei will provide free training on specialist ICT and telecoms areas targeted for use in different sectors such as banking, power, oil and gas, manufacturing, information technology, telecoms and e-government.	2000 youths	Huawei, Nigerian government	Lagos, Abuja	2016 - ongoing

Government officials' training	A 'train the trainer' program to equip the participants with skills necessary to carry out training activities in their home country and different ministries. The training focused on the use of IT in the world and in governance, socio-economic value of the mobile industry, digital economy, telecommunication strategy, ICT trends and policies and cyber security approach and strategy.	8 government officials	Huawei	China	15 days (September 2016)

Table 4: Overview of Huawei's contribution to general education in Nigeria

Form	Institution	Short description	Duration
Scholarships	University of Lagos (UNILAG)	Huawei initiated the Huawei-UNILAG scholarship in 2011. So far, 20 students have benefitted.	2011 and 2012 academic sessions
Memorandum of Understanding on joint innovation		Huawei continues to collaborate with UNILAG on a number of projects including a 'Joint Open Innovation Laboratory' and an 'Innovation and Experience Centre' set up at the university in 2016.	2016
Scholarships and Laboratory equipment donation	African University of Science and technology, Abuja (Affiliate of Nelson Mandela Institute)	Huawei signed a MOU in 2014 with the Nelson Mandela Institute (NMI) to provide ICT scholarships to the tune of $30,000 to the African University of Science and Technology, Abuja. ICT products and equipment worth $50,000 was donated to the university to aid in building the university's telecoms research laboratory (Huawei 2014b).	2014